

CLAIMS

1. A method for reducing the contaminant emissions including noxious gases and particulate material in an exhaust stream from a combustion device comprising:
 - a) collecting the hot exhaust stream emitted said combustion device;
 - b) increasing the dew point of said hot exhaust stream;
 - c) reducing the velocity of said hot exhaust stream having an increased dew point;
 - d) reducing the volume and pressure of said hot exhaust stream having an increased dew point by cooling said stream, thereby causing partial condensation of the gases using the particulate material as condensing nuclei such that a part of the gases in said exhaust stream are condensed into liquid form such that said liquid traps particles and noxious gases from said exhaust stream yielding a liquid extraction stream and a residual gaseous, non-condensed stream; and
 - e) collecting said condensed extraction stream.
2. The method of claim 1 wherein said reducing the velocity of said exhaust stream comprises separating said exhaust stream into multiple sub flows.
3. The method of claim 1 wherein said reducing the velocity of said exhaust stream comprises directing said exhaust stream into one or more channels having a greater collective cross-sectional area than the cross sectional area of said exhaust channel.
4. The method of claim 1 wherein said reducing the temperature of said exhaust comprises transferring heat from said exhaust stream to a cooling medium.

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5. The method of claim 1 wherein said condensed extraction stream is treated such it is suitable to be disposed of within a municipal sewage network.
6. The method of claim 1 wherein the dew point of said exhaust stream is increased by adding water to said exhaust stream prior to substantially reducing the temperature of said exhaust stream.
7. The method of claim 6 wherein said dew point of said exhaust stream is increased by introducing water into said exhaust stream.
8. The method of claim 7 wherein said introducing water into said exhaust stream comprises spraying water into said exhaust stream.
9. The method of claim 7 wherein said introducing water into said exhaust stream comprises maintaining a source liquid water within a chamber through which said exhaust stream passes such that water from said source is evaporated into said exhaust stream.
10. The method of claim 7 wherein said introducing water into said exhaust stream comprises injecting water vapor into said exhaust stream.
11. The method of claim 6 wherein said exhaust stream with elevated dew point is cooled so as to cause condensation of at least some of the gases contained therein, thereby trapping particulates and gases from said exhaust stream in an extract stream.
12. A device for reducing the contaminant emissions in an exhaust stream from a combustion source comprising:
 - a) means for receiving a hot exhaust stream emitted by a combustion source from an exhaust channel;
 - b) means for increasing the dew point of said hot exhaust stream;

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- c) means for reducing the velocity of said hot, increased dew point exhaust stream;
 - d) means for reducing the temperature of said exhaust stream such that a part of the gases in said exhaust stream are condensed into liquid form such that said liquid traps particles and noxious gases from said exhaust stream yielding a liquid extraction stream and a residual gaseous exhaust stream; and
 - e) means for collecting said extraction stream.
13. The device of claim 12 wherein said means for reducing the velocity of said exhaust stream comprises one or more channels have greater collective cross sectional area than the cross section area of said exhaust channel.
14. The device of claim 12, further comprising:
- a) means for injecting water into said hot exhaust stream, thus increasing the humidity of said stream, thereby increasing its dew point temperature; and
 - b) a condensing chamber for the cooled exhaust stream with increased dew point comprising a sump for confining the liquid obtained from the condensed gases.
15. The device of claim 12 comprising means for increasing said dew point of said exhaust stream by adding water to said exhaust stream prior to substantially reducing the temperature of said exhaust stream.
16. The device of claim 15 comprising means for introducing liquid water or water vapor into said exhaust stream.
17. The device of Claim 15, wherein said means for increasing the dew point comprises a source of liquid through part of which the hot exhaust stream

is passed such that the heat of said hot exhaust stream raises the temperature of said liquid to vaporize it.

18. The device of claim 17 wherein said liquid reservoir has an exit near its upper end permitting exiting the liquid by gravity towards another deposit located besides said liquid reservoir.
19. The device of claim 12 wherein said apparatus further comprises a liquid dosing apparatus comprising a hollow cylinder having at its upper end a liquid entrance; immediately underneath said entrance there is a round orifice permitting entrance of liquid to this hollow cylinder; at the lower end of said hollow cylinder there is a constricting element permitting to adjust the number of droplets entering said space for humidifying the gases.
20. The device of claim 19 wherein said hollow cylinder has a window permitting to visual monitoring of the liquid level and droplets movement.
21. The device of claim 20 wherein underneath said constricting element there is an exit tube for the droplets, conveying them to the space wherein the gases are humidified, and due to their high temperature, the droplets evaporate, thus reducing the temperature of the dew point of the gases within the space.
22. The device of claim 19 wherein in that said liquid entrance is an electric or mechanical valve.
23. The device of claim 12 wherein said means for reducing the temperature of said exhaust stream simultaneously reduces the pressure and volume of said exhaust stream.

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24. The method of claim 1 or device of claim 12 wherein said combustion device is used to power a vehicle.